

## Appendix A. Claim Amendments.

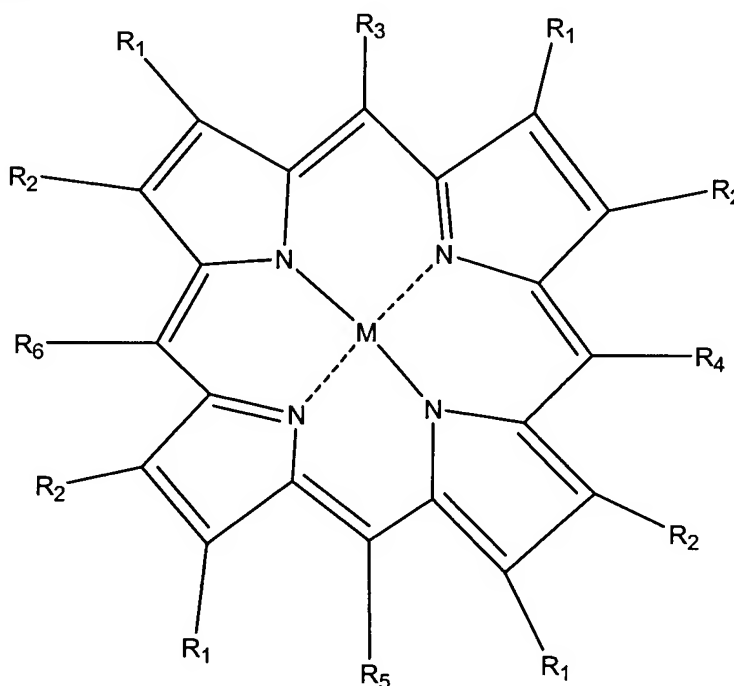
1. (currently amended) A method for selectively binding a neutral, positively-charged, or negatively-charged molecule, in solution or in the solid state, said method comprising contacting the molecule with a compound comprising a porphyrin macrocycle, and further comprising one or more carboranyl groups that are linked to the porphyrin macrocycle by carbon-carbon bonding; wherein said selective binding comprises one or more of the following steps selected from the group consisting of (a) through (c):

(a) coordination to a pentacoordinated or hexacoordinated metal ion in the core of the porphyrin macrocycle; or

(b) electrostatic interaction with one or more carboranyl groups; [[and]] or

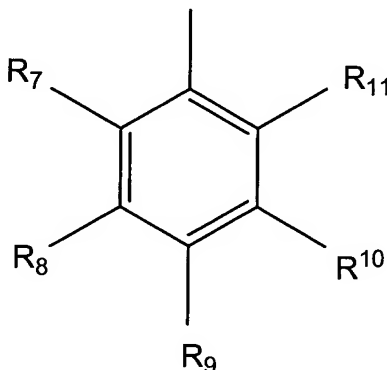
(c)  $\pi$ - $\pi$  interaction with the porphyrin macrocycle;

wherein the compound has structure I:



I

wherein M is 2H or a pentacoordinated or hexacoordinated metal ion; R1 and R2 are each independently hydrogen, C<sub>1</sub> to C<sub>4</sub> alkyl or hydroxyalkyl; and R3, R4, R5, and R6 are each independently hydrogen, phenyl, or substituted phenyl having structure II:



**II**

wherein R7, R8, R9, R10, and R11 are independently hydrogen or a carboranyl group, wherein such a carboranyl group is linked to the phenyl group by a carbon-carbon bond; and wherein one or two of R7, R8, R9, R10, and R11 are such a carboranyl group;

wherein at least one of R3, R4, R5, and R6 is a substituted phenyl having structure II and having at least one such a carboranyl group; and

wherein one or more of the following conditions (d) through (f) are satisfied:

(d) M is an iron(III), manganese(III), aluminum(III), or tin(IV) ion; or

(e) at least one of R3, R4, R5, and R6 is a substituted phenyl having structure II and having at least one such carboranyl group at R7 or R11; or

(f) at least one of the carboranyl groups is a *clos*o-carboranyl group.

2. (canceled)

3. (currently amended) A method as recited in Claim 1, wherein ~~the compound comprises a M~~ is a zinc(II), iron(III), manganese(III), aluminum(III), or tin(IV) ion ~~at the core of the porphyrin macrocycle.~~

4. (currently amended) A method as recited in Claim 1, wherein ~~the compound comprises one or more negatively-charged nido-carborane groups bound to the periphery of the porphyrin macrocycle.~~ at least one of the carboranyl groups is a nido-carboranyl group.

5. (currently amended) A method as recited in Claim 1, wherein ~~the compound comprises one or more closo-carborane groups bound to the periphery of the porphyrin macrocycle.~~ at least one of the carboranyl groups is a closo-carboranyl group.

6. (currently amended) A method as recited in Claim 1, wherein M ~~the core of the porphyrin macrocycle~~ is positively charged or protonated.

7. (canceled)

8. (currently amended) A method as recited in Claim ~~[[7,]]~~ 1, wherein at least two of R3, R4, R5, and R6 are substituted phenyls having structure II and each having at least one such carboranyl group.

9. (currently amended) A method as recited in Claim ~~[[7,]]~~ 1, wherein each of R3, R4, R5, and R6 is a substituted phenyl having structure II and each having at least one such carboranyl group.

10. (currently amended) A method as recited in Claim ~~[[7,]]~~ 1, wherein at least two of R3, R4, R5, and R6 are substituted phenyls having structure II and each having at least one such *nido*-carboranyl group.

11. (currently amended) A method as recited in Claim [[7,]] 1, wherein each of R3, R4, R5, and R6 is a substituted phenyl having structure II and each having at least one such *closo*-carboranyl group.

12. (currently amended) A method as recited in Claim [[7,]] 1, wherein at least two of R3, R4, R5, and R6 are substituted phenyls having structure II and each having at least one such carboranyl group at R7 or R11.

13. (currently amended) A method as recited in Claim [[7,]] 1, wherein each of R3, R4, R5, and R6 is a substituted phenyl having structure II and each having at least one such carboranyl group at R7 or R11.

14. (currently amended) A method as recited in Claim [[7,]] 1, wherein at least two of R3, R4, R5, and R6 are substituted phenyls having structure II and each having at least one such carboranyl group at R8 or R10.

15. (currently amended) A method as recited in Claim [[7,]] 1, wherein each of R3, R4, R5, and R6 is a substituted phenyl having structure II and each having at least one such carboranyl group at R8 or R10.

16. (original) A method as recited in Claim [[7,]] 1, wherein at least two of R3, R4, R5, and R6 are substituted phenyls having structure II and each having at least one such carboranyl group at R9.

17. (currently amended) A method as recited in Claim [[7,]] 1, wherein each of R3, R4, R5, and R6 is a substituted phenyl having structure II and each having at least one such carboranyl group at R9.

**18.** (currently amended) A method as recited in Claim ~~[[7,]]~~ 1, wherein the compound is selected from the group consisting of compounds **3**, ~~[[4,]]~~ **5**, ~~[[6,]]~~ **9**, ~~[[10,]]~~ **11**, ~~[[12,]]~~ **15**, ~~[[16,]]~~ **17**, ~~[[18,]]~~ **21**, ~~[[22,]]~~ **23**, ~~[[24,]]~~ **28**, ~~[[29,]]~~ **30**, ~~[[31,]]~~ **33**, and ~~[[34,]]~~ **35**, and ~~**36**~~, as depicted in Figures 1, 2, 3, 4, 5, and 6.